

## (12) United States Patent

Boegli et al.

(54) DEVICE FOR EMBOSSING PACKAGING MATERIAL WITH A SET OF EMBOSSING ROLLERS OF THE MALE-FEMALE DIE **TYPE** 

(71) Applicant: Boegli Gravures SA, Marin-Epagnier

Inventors: Charles Boegli, Marin-Epagnier (CH);

Werner Steffen, Stans (CH); Alain

Droz, Thielle (CH)

(73) Assignee: Boegli-Gravures S.A., Marin-Epagnier

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

14/908,144 (21) Appl. No.:

(22) PCT Filed: Aug. 26, 2014

(86) PCT No.: PCT/IB2014/064069

§ 371 (c)(1),

(2) Date: Jan. 28, 2016

(87) PCT Pub. No.: WO2015/028939

PCT Pub. Date: Mar. 5, 2015

(65)**Prior Publication Data** 

> US 2016/0200066 A1 Jul. 14, 2016

(30)Foreign Application Priority Data

(EP) ...... 13181978 Aug. 28, 2013

(51) **Int. Cl.** 

B31F 1/07 (2006.01)B44B 5/02 (2006.01)

(52) U.S. Cl.

CPC ...... B31F 1/07 (2013.01); B44B 5/026 (2013.01); B31F 2201/0725 (2013.01);

(Continued)

US 9,636,885 B2 (10) Patent No.:

(45) Date of Patent:

May 2, 2017

(58) Field of Classification Search

CPC ...... B31F 1/07; B31F 2201/072; B31F 2201/0733; B31F 2201/0741;

(Continued)

(56)References Cited

U.S. PATENT DOCUMENTS

4,280,978 A 7/1981 Dannheim et al. 5,007,271 A 4/1991 Boegli

(Continued)

FOREIGN PATENT DOCUMENTS

DF 19734414 2/1999 EP 0114169 B1 8/1984

(Continued)

OTHER PUBLICATIONS

International Search Report of Jan. 19, 2015 for PCT/IB2014/

Written Opinion of the International Search Authority of Jan. 19,

2015 for PCT/IB2014/064069.

Primary Examiner — Jill Culler

Assistant Examiner - Marissa Ferguson Samreth

(74) Attorney, Agent, or Firm — Andre Roland S.A.;

Nikolaus Schibli

ABSTRACT (57)

The embossing device for embossing packaging material comprises a set of embossing rollers with male die and female die rollers co-operating with one another, the surface of which is provided with texture elements, wherein the texture elements (M6R6) on the surface of the female die roller (M6), which are assigned to the texture elements (P6E6) on the surface of the male die roller (P6) are not inversely congruent by an amount of above 15 µm in axial and radial direction and the texture elements of the male die and female roller associated with one another comprise facets (F) for the purpose of local pressure elevation. A facet (F) comprises faces (FN), which with respect to the imaginary, continuous surface of the texture is inclined. With such (Continued)

